Massachusetts Division of
Health Care Finance and Policy

# Non-Emergent and Preventable ED Visits

ANALYSIS IN BRIEF

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Use of the emergency department (ED) for non-emergent care has long been a concern of providers, policy makers, and payers. Use of the ED for non-emergent conditions can be an indicator of access barriers, financial or otherwise, to more appropriate primary care. EDs are not designed to provide continuity of care, patient education, and chronic care management, all hallmarks of quality primary care.

In addition, the price of an ED visit is usually higher than that of a doctor's office visit. Not only is overhead in the ED higher, but since the ED physician frequently doesn't know the patient and probably doesn't have immediate access to the patient's medical records, more testing may be ordered in the ED than would be necessary if the patient's primary care physician were providing the care.

Finally, although many factors contribute to ED overcrowding, non-emergent visits may be contributing to the growth in the volume of Massachusetts ED visits observed since FY96.[1] Increased enforcement of the federal Emergency Medical Treatment And Labor Act (EMTALA) regulations and the spread of "prudent layperson" standards for insurance payment for ED visits also may have encouraged overutilization of EDs for non-emergent care.

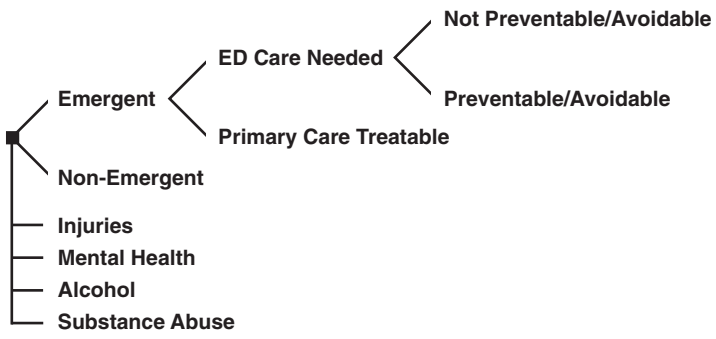
This issue of *Analysis in Brief* uses a recently developed methodology to estimate the proportion of outpatient ED visits that are non-emergent or otherwise treatable in a primary care setting, and those that could have been avoided with better primary care. It also examines how demographic factors and payer status affect these measures, and discusses the significance of these findings for improving the functioning of and access to EDs and the primary care system in Massachusetts.

## Methodology

The data used in these analyses are from the new Massachusetts Outpatient Emergency Department Database collected by the Massachusetts Division of Health Care Finance and Policy.[2] This database includes visit-level information for those ED patients who are discharged as outpatients and not admitted to the reporting hospital. Patients admitted to inpatient or outpatient observation stays account for approximately 16% of total ED visits.[3] All of the estimates provided below, therefore, pertain only to the outpatient portion of total ED visit volume for FY02, the first complete year of data available.[4]

These analyses utilize an algorithm developed by John Billings.[5] Billings convened a panel of ED physicians who analyzed 6,000 ED records incorporating information on: initial complaint, vital signs and history, resources used in the ED, and discharge diagnosis. The visits were evaluated for urgency, need for resources typically available

**Figure 1: Classification of ED Visits**




Source: www.ahrq.gov/data/safetynet/billfig9.htm.

in EDs but not in physician offices, and whether the patient's condition was preventable with good primary care. Finally, visits were grouped by discharge diagnosis, and the proportion of visits was then calculated for each discharge diagnosis that fell into the various categories used. Figure 1 on page 1 shows the categories and their relationships.

Non-emergent visits include those for conditions such as a sore throat. The definition of emergent is any condition that requires care within 12 hours. The emergent category is further subdivided into: visits that could have been treated in a primary care setting (e.g., an infant with a fever of 102˚), visits that require ED care but could have been avoided with better primary care (e.g., an asthma flare-up), and visits that require ED care and could not have been avoided (e.g., a heart attack). Taken together, visits considered non-emergent, emergent—primary care treatable, and emergent—ED care needed but preventable/avoidable are referred to as preventable/avoidable because such visits could have been avoided by providing care elsewhere, or the need for them could have been prevented. Visits with a principal diagnosis relating to injury, mental health, or alcohol or drug abuse fall into separate categories since the urgency of these visits is more difficult to determine.

## Non-Emergent and Preventable/ Avoidable Visits

Using this algorithm, an estimated 20.6% of all FY02 outpatient ED visits in Massachusetts were attributable to non-emergent conditions (see Figure 2), while 18.9% were designated as emergent—primary care treatable, and 6.0% were emergent—ED care needed but preventable/avoidable. In all, nearly 46% of outpatient ED visits were preventable/avoidable.

Visits were analyzed by gender and age. A somewhat greater proportion of outpatient ED visits by females was estimated to be non-emergent (22.8%) compared to males (18.3%). This pattern is even more apparent for preventable/avoidable visits as a whole (49.8% versus 40.9%). However, ED visit rates for preventable/avoidable conditions were remarkably similar (about 46%) for all ages.

Another way of understanding these patterns is to examine population-based rates (see Figure 3).[6] In FY02, the non-emergent ED utilization rate was 71 visits per 1,000 Massachusetts residents, and the preventable/avoidable rate was 157 per 1,000, compared to a total outpatient ED utilization rate of 344 per 1,000. Non-elderly adults had the highest utilization rates of non-emergent and preventable/avoidable visits (78 per 1,000 and 166 per 1,000 respectively), while seniors had the lowest rates (53 per 1,000 and 138 per 1,000 respectively), with children at intermediate levels. Similar patterns were found in the overall outpatient ED utilization rates for these age groups. Again, females were more likely to visit the ED for a non-emergent or preventable/avoidable visit (77 per 1,000 and 170 per 1,000) than males (64 per 1,000 and 143 per 1,000). However, males had a higher rate of ED utilization overall than females (350 per 1,000 versus 340 per 1,000), mainly because males had much higher rates of injury-related visits. Nationally, however, it was just the opposite: females had higher ED utilization rates overall than males.[7]

## Insurance Status and Payer

It is often assumed that the uninsured population utilizes the ED disproportionately for non-

**Figure 2: Outpatient ED Visits by Age Group and Gender, FY02**

| | Non-Emergent | Emergent Primary Care Treatable | Emergent, ED Care Needed, Preventable/ Avoidable | Subtotal: Preventable/ Avoidable | Emergent, ED Care Needed, Not Preventable/ Avoidable | Injury | Mental Health Alcohol, and Substance Abuse | Unclassified |
|---|---|---|---|---|---|---|---|---|
| **All Patients** | 20.6% | 18.9% | 6.0% | **45.5%** | 9.1% | 34.0% | 4.4% | 7.0% |
| **Female** | 22.8% | 20.7% | 6.3% | **49.8%** | 9.7% | 29.3% | 4.2% | 7.6% |
| **Male** | 18.3% | 17.2% | 5.4% | **40.9%** | 8.5% | 38.7% | 5.0% | 6.8% |
| **Youth 0-17** | 19.8% | 19.7% | 6.2% | **45.7%** | 6.0% | 40.8% | 2.6% | 4.9% |
| **Adults 18-64** | 21.4% | 18.5% | 5.5% | **45.4%** | 9.2% | 33.0% | 5.6% | 6.8% |
| **Seniors 65+** | 17.7% | 20.5% | 7.6% | **45.7%** | 14.3% | 26.5% | 2.3% | 11.1% |

**Figure 3: Outpatient ED Visits per 1,000 Residents by Age Group and Gender, FY02**

| | Non-Emergent | Emergent Primary Care Treatable | Emergent, ED Care Needed, Preventable/ Avoidable | Subtotal: Preventable/ Avoidable | Emergent, ED Care Needed, Not Preventable/ Avoidable | Injury | Mental Health Alcohol, and Substance Abuse | Unclassified | All Visits |
|---|---|---|---|---|---|---|---|---|---|
| **All Patients** | 71 | 66 | 20 | **157** | 32 | 116 | 16 | 24 | **344** |
| **Female** | 77 | 71 | 22 | **170** | 33 | 99 | 15 | 24 | **340** |
| **Male** | 64 | 60 | 19 | **143** | 30 | 135 | 18 | 24 | **350** |
| **Youth 0-17** | 63 | 62 | 20 | **145** | 19 | 129 | 8 | 15 | **317** |
| **Adults 18-64** | 78 | 68 | 20 | **166** | 34 | 119 | 21 | 25 | **364** |
| **Seniors 65+** | 53 | 62 | 23 | **138** | 43 | 79 | 7 | 34 | **302** |

emergent visits since they are more likely to face financial barriers in accessing primary care providers. However, analysis of the ED data by payer type revealed relatively small differences in the proportion of non-emergent and preventable/avoidable ED among groups (see Figure 4).

In FY02, Medicare patients had the lowest percent of non-emergent outpatient visits (18.8%), while the percents for Medicaid patients and the uninsured were slightly higher (23.6% for each group). The percent for privately insured patients was intermediate (20.5%). The percents of visits for all preventable/avoidable conditions were similarly close, although the ranking shifted among the payers so that the percent for privately insured patients was lower than the percent for Medicare patients, and highest for Medicaid patients.

However, a substantially different picture emerged when the annual population-based rates were examined.[8] Overall, at 664 visits per 1,000, the uninsured were 2.9 times as likely to have had an outpatient ED visit for any reason as the privately insured at 227 visits per 1,000. This wide disparity was also reflected in their rates of non-emergent and preventable/avoidable visits: 157 and 320 visits per 1,000 for the uninsured compared to 46 and 103 visits per 1,000 for the privately insured. The Medicaid population had the second highest rates at 107 non-emergent visits and 238 preventable/avoidable visits per 1,000.

## Patterns by Race/Ethnicity

There are some differences in ED utilization patterns among racial/ethnic groups (see Figure 5). Hispanics and blacks, at 53.2% and 51.2% respectively, had the highest proportion of outpatient ED visits for preventable/avoidable conditions compared to whites who had the lowest percentage at 43.6%. The percentage of ED utilization for non-emergent visits varied somewhat less among the groups, from a low of 19.7% for whites to a high of 23.7% for Hispanics.

When population-based rates were considered, the differences were exacerbated. In FY02, blacks visited the ED as outpatients at considerably higher rates overall than did whites, Hispanics, and other minorities (610 outpatient ED visits per 1,000). Hispanics had the second highest rates overall and in every subcategory, including non-emergent and preventable/

**Figure 4: Outpatient ED Visits by Payer, FY02**

| | % of Outpatient ED visits | | Rate per 1,000 Mass. Residents | | |
|---|---|---|---|---|---|
| | Non-Emergent | All Preventable/ Avoidable | Non-Emergent | All Preventable/ Avoidable | All Visits |
| **Uninsured** | 23.6% | 48.2% | 157 | 320 | 664 |
| **Medicaid** | 23.6% | 52.4% | 107 | 238 | 455 |
| **Medicare** | 18.8% | 47.2% | 59 | 149 | 316 |
| **Private** | 20.5% | 45.6% | 46 | 103 | 227 |

**Figure 5: Outpatient ED Visits by Race/Ethnicity, FY02**

| | % of Outpatient ED visits | | Rate per 1,000 Mass. Residents | | |
|---|---|---|---|---|---|
| | Non-Emergent | All Preventable/ Avoidable | Non-Emergent | All Preventable/ Avoidable | All Visits |
| **White** | 19.6% | 43.6% | 62 | 137 | 313 |
| **Black** | 23.6% | 51.2% | 144 | 312 | 610 |
| **Hispanic** | 23.7% | 53.2% | 121 | 272 | 510 |
| **Other** | 23.3% | 49.8% | 46 | 98 | 196 |

avoidable visits. This stands in contrast to their number one ranking for percentage of visits in these categories.

### Time of Day and Day of the Week

The question of *when* EDs are used for non-emergent conditions, or emergent but primary care treatable conditions, is important.

Figure 6 shows that the percent of visits for non-emergent and emergent—primary care treatable conditions varied somewhat by time of day. The highest percentages for such visits occurred during the early morning (6 to 9 AM), while the lowest were in the early evening (5 to 9 PM). For visits occurring during regular business hours (Monday through Friday, 9 AM to 5 PM), the percent of non-emergent and preventable/avoidable conditions were nearly identical to the rates for total ED visits.

Analysis of the data by day of the week showed that visits for preventable/avoidable conditions in hospital EDs were slightly higher on weekends, ranging from a low of 44.0% on Thursday to a high of 47.7% on Sunday (see Figure 7).

Of course the volume of ED outpatients is spread unevenly over the time of day and days of the week. Some periods and days are busier than others. Combining the data for day of week and time of day showed the percentage of all visits in the various categories that occurred during regular business hours, and the percentage that occurred during off-hours (see Figure 8). An estimated 31.7% of outpatient visits to the ED for non-emergent conditions, and 30.6% of visits for conditions that are emergent but could have been treated in a primary care setting, occurred during regular business hours. This amounts to about 287,000 visits per year, slightly less than 10% of all ED visits to Massachusetts hospitals in FY02.

### Summary

In FY02, over 20% of all outpatient ED visits in Massachusetts were estimated to be for non-emergent care. An additional 25% were emergent but could have been treated in a primary care setting, or could have been prevented or avoided with better primary care. Even when considering the portion of ED visits that resulted in admission (and presumed to be emergent), nearly 40% of all ED visits were substituting for primary care.

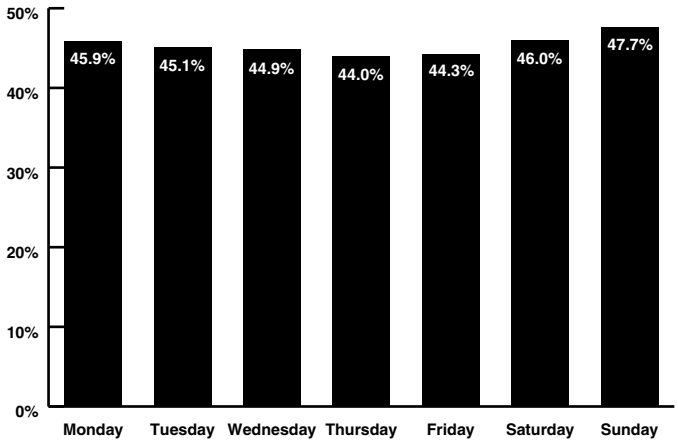
Certain patient characteristics were associated with higher proportions of non-emergent and preventable/avoidable visits. Females, blacks, and Hispanics had somewhat higher percentages of their total outpatient ED visits in these categories. Among payer types, Medicaid patients had the highest percentages of non-emergent and preventable/avoidable visits. Unexpectedly, however, few of these demographic or payer differences were very large. The proportions of visits that fell into the various categories were fairly similar for patients across the spectrum. Although some types of patients visited the ED much more frequently than others overall (as revealed by analysis of population-based rates), they did so for a wide variety of reasons and diagnoses, not just for non-emergent care.

Although the uninsured did not appear to be much different from the insured in terms of the distribution of their visits across the categories studied, their overall rate of outpatient ED utilization was very high. Similarly, blacks and Hispanics showed much more frequent use of the ED for visits of all types compared to whites. Medicaid enrollees also appeared to rely on the ED much more than the privately insured, although not quite at the high rates experienced by the uninsured. The reasons for high utilization by these groups are probably complex. High rates in all or most visit categories suggest a high burden of disease and injury in addition to the possibility of problems with access to primary care.

**Figure 6: Outpatient ED Visits by Time of Day, FY02**

| | Non-Emergent | Emergent Primary Care Treatable | Emergent, ED Care Needed Preventable/ Avoidable | Subtotal: Preventable/ Avoidable | All Other |
|---|---|---|---|---|---|
| **Midnight to 5:59 AM** | 20.5% | 21.9% | 7.3% | **49.7%** | 50.3% |
| **6 AM to 8:59 AM** | 22.6% | 21.4% | 7.0% | **51.0%** | 49.0% |
| **9 AM to 4:59 PM** | 20.9% | 18.5% | 5.6% | **45.0%** | 55.0% |
| **5 PM to 8:59 PM** | 19.6% | 17.7% | 5.4% | **42.7%** | 57.3% |
| **9 PM to 11:59 PM** | 20.0% | 19.8% | 6.2% | **46.0%** | 54.0% |
| **Total** | **20.6%** | **18.9%** | **6.0%** | **45.5%** | **54.5%** |

**Figure 7: Preventable/Avoidable Outpatient ED Visits by Day of the Week, FY02**




It is interesting that non-elderly adults had a somewhat higher rate of preventable/avoidable visits when compared to children and seniors, perhaps because of higher rates of uninsured in this group or fewer regular ties to the medical system. The more nuanced picture of ED utilization that emerged when both percentage distributions and population rates were studied demonstrates the value of using both measures.

Surprisingly, the percent of preventable/avoidable visits occurring during regular business hours was no lower than average for all hours, and the lowest percentages of such visits occurred after most physician offices and ambulatory clinics were closed. It is unclear why this was so, although other studies have shown that patients who visited the ED for non-emergent conditions often did so because they were not linked to a regular source of care, were unable to get a timely appointment with their PCP if they had one, were referred by their PCP, or believed that their symptoms required ED care.[9] The fact that a substantial portion of non-emergent and emergent but primary care treatable visits occurred during regular business hours suggests capacity constraints in individual physician offices and primary care clinics. Further research, including geographical analysis and analysis of variation among hospitals, is warranted. Analysis of the pattern of visits by frequent visitors to the ED may also be informative about the drivers of preventable/avoidable ED utilization.

## Discussion

Taken together, these findings point to a primary care system that is not functioning optimally in Massachusetts. Not only may there be barriers to accessing primary care, but the quality of care may also be suffering, as suggested by the substantial number of preventable/avoidable visits by the privately insured population (who probably face the fewest barriers, at least financial ones, to primary care). The privately insured constitute a very large proportion of the state's population, and as such, in FY02 they accounted for 51% of all non-emergent and 54% of all preventable/avoidable visits to Massachusetts EDs (not shown). It appears

**Figure 8: Outpatient ED Visits by Category, Time of Day, and Day of Week, FY02**

| | Non-Emergent | Emergent Primary Care Treatable | Emergent, ED Care Needed, Preventable/ Avoidable | Emergent, ED Care Needed, Not Preventable/ Avoidable | Injury | Mental Health Alcohol, and Drug Related | Unclassified |
|---|---|---|---|---|---|---|---|
| **Regular Business Hours** | **31.7%** | **30.6%** | **30.0%** | **32.7%** | **32.5%** | **34.4%** | **33.9%** |
| **Off-hours Monday-Friday** | | | | | | | |
| Midnight-3:59 AM | 6.3% | 7.3% | 7.9% | 8.6% | 4.1% | 8.4% | 6.0% |
| 6 AM-8:59 AM | 5.9% | 6.1% | 6.5% | 6.6% | 4.8% | 3.5% | 5.7% |
| 5 PM-8:59 PM | 16.5% | 16.1% | 15.5% | 15.1% | 19.8% | 17.8% | 16.7% |
| 9 PM-11:59 PM | 8.5% | 9.1% | 9.1% | 8.9% | 8.7% | 10.3% | 8.2% |
| **Total Off-hours Monday-Friday** | **37.2%** | **38.6%** | **39.0%** | **39.2%** | **37.5%** | **40.1%** | **36.6%** |
| **Total Saturday and Sunday** | **31.1%** | **30.8%** | **31.0%** | **28.1%** | **30.0%** | **25.5%** | **29.5%** |
| **Total** | **100.0%** | **100.0%** | **100.0%** | **100.0%** | **100.0%** | **100.0%** | **100.0%** |

**Analysis in Brief**

*Analysis in Brief* reflects the goal of the Division of Health Care Finance and Policy to monitor changes in the health care marketplace through useful and timely analyses of health care data. Several times a year, this publication reports on our analyses of health care costs, quality and access.





that Massachusetts EDs play a large role in providing primary care to a wide variety of populations.

Large volumes of preventable/avoidable visits to EDs may negatively impact the functioning of EDs themselves. Frequent overcrowding of Massachusetts EDs is no doubt exacerbated by the presence of these patients. Although ambulance diversions are thought to be attributable mainly to the "boarding" in the ED of patients who need an inpatient bed but for whom one is not immediately available, some diversions may be due to the overwhelming of ED capacity by too many outpatients.

The financial cost of providing care in EDs instead of in physicians' offices or other alternative settings is considerable as well. Total FY02 ED visit charges in Massachusetts hospitals exceeded $1.5 billion. The median charge for an ED visit in FY02 was $437; a comparable figure for a physician's office or clinic visit is probably much lower.[10] Even if only 10% of the ED visits that are potentially treatable in a primary care setting and that occur during regular business hours were moved to clinic or office settings, substantial savings could accrue.

However, nearly 70% of visits that could be treated in a primary care setting occur on weekends or during the evening or night, so some use of the ED for preventable/avoidable conditions makes sense when other providers are not open. Outpatient ED use at these times may make financial sense for the system as a whole since EDs must maintain a minimum level of staffing around the clock, but do not experience a high number of patient visits during certain hours resulting in unused capacity. Concentrating visits in EDs at these times may also be more economical than keeping open large numbers of alternative sites. From the point of view of quality, moreover, EDs may provide advantages to certain populations, e.g., Massachusetts EDs provide interpreter services to non-English speakers. However, it would be desirable to redirect some of these visits, especially those that occur, or could occur, during regular business hours. Further research needs to be done on why these types of ED visits occur, which kinds of visits should be redirected, how best to do it, and what capacity may exist or could be created in other settings to accept them.

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[1] Massachusetts hospital cost report data show an increase of 355,928 ED visits, or 14%, between FY96 and FY02.

[2] ED records included in the database are "as reported" by hospitals. All EDs in non-federal acute care hospitals are included; one ED located in a Veteran's Administration hospital is not included. Although the data are edited before acceptance, and hospitals verify summary reports from their submitted data, the submissions are not audited by the Division. Coding practices may differ across hospitals and thus affect results. The database includes up to 1% of records that have failed edit standards. Since FY02 was the first year complete data were collected, it may be particularly subject to quality problems. Known limitations affecting particular analyses are indicated where appropriate.

[3] Hospitals report data on ED patients who are admitted as part of their inpatient and outpatient observation stay data submissions.

[4] FY02 runs from October 1, 2001 through September 30, 2002.

[5] Related material can be downloaded at www.ahrq.gov/data/safetynet. For an example of an analysis using an earlier version of the algorithm, see John Billings, et al., Emergency Department Use in New York City: A Substitute for Primary Care? Issue Brief, The Commonwealth Fund, November 2000. This algorithm was developed using records from Bronx, NY EDs, and was not independently validated using Massachusetts data.

[6] Rate calculations include only visits by Massachusetts residents. Readers are reminded that these utilization rates refer to outpatient ED visits only. Furthermore, they do not capture any ED visits made by Massachusetts residents to EDs located in other states, or to one ED located in a Veterans' Administration hospital. Thus, they understate total ED utilization rates. In addition, some demographic and age groups are more likely to be admitted than others, e.g., 46% of all ED visits by seniors result in admission, while only 7% of children's visits do. Thus the impact of admissions on the indicated ED utilization rate will vary.

[7] National Hospital Ambulatory Medical Care Survey: 2002 Emergency Department Summary. National Center for Health Statistics, March, 2004. The NHAMCS rates include admitted ED patients as well as outpatients. However, when admitted Massachusetts ED patients are added to the utilization rate, males still show a slightly higher rate than do females (not shown).

[8] Three hospitals had poorly coded payer data and are eliminated from the payer comparison calculations. Therefore, the population-based utilization rate is understated and is not strictly comparable to the rates presented in other figures. The rate for the uninsured uses estimates of the uninsured population from a spring 2002 DHCFP survey.

[9] See Joshua H. Sarver et al., Usual Source of Care and Nonurgent Emergency Department Use. Academic Emergency Medicine 9(9):916-923, and G.P. Young, et al., Ambulatory Visits to Hospital Emergency Departments, Patterns and Reasons for Use. 24 Hours in the ED Study Group. JAMA 276(6):460-65.

[10] For comparison, the Medicare payment rate to a hospital for a mid-level clinic visit in FY04 is $53.56, while for a mid-level ED visit it is $130.77 (Federal Register 68(216):63598-63599, November 7, 2003).

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